

What is claimed is:

1. A chemical mechanical polishing (CMP) pad for in situ monitoring, comprising:

a polishing layer including a pseudo window area, the pseudo window area having a thickness less than a thickness of the polishing layer and a thickness greater than zero.

2. The chemical mechanical polishing (CMP) pad of claim 1, wherein a recessed region is adjacent the pseudo window area.

3. The chemical mechanical polishing (CMP) pad of claim 1, further comprising a transparent supporting layer adjacent the pseudo window area.

4. A chemical mechanical polishing (CMP) pad for in situ monitoring, comprising:

a polishing layer having a recessed region, thereby forming a pseudo window area adjacent to the recessed region.

5. The chemical mechanical polishing (CMP) pad of claim 4, wherein the pseudo window area is semi-transparent.

6. The chemical mechanical polishing (CMP) pad of claim 4, wherein the pseudo window area is 1.0-2.0 mm thick.

7. The chemical mechanical polishing (CMP) pad of claim 4, wherein the polishing layer is made of syndiotactic 1,2-polybutadiene, polyurethane, or PBD.
8. The chemical mechanical polishing (CMP) pad of claim 4, wherein the polishing layer interacts with a platen.
9. The chemical mechanical polishing (CMP) pad of claim 8, wherein the platen includes a platen window, made of a transparent material.
10. The chemical mechanical polishing (CMP) pad of claim 9, wherein the transparent material includes polycarbonate, polyethylene terephthalate glycol, polypropylene, 2-aryl glycol carbonate, quartz or glass.
11. The chemical mechanical polishing (CMP) pad of claim 9, wherein the platen window is flush with the platen and preserves the recessed region between the platen and the polishing layer.
12. The chemical mechanical polishing (CMP) pad of claim 9, wherein the platen window protrudes from the platen to reduce the recessed region between the platen and the polishing layer.
13. The chemical mechanical polishing (CMP) pad of claim 9, wherein the platen window protrudes from the platen to fill the recessed region between the platen and the polishing layer.

14. A chemical mechanical polishing (CMP) pad for in situ monitoring, comprising:

a polishing layer including a transparent supporting layer, thereby forming a pseudo window area adjacent to the transparent supporting layer.

15. The chemical mechanical polishing (CMP) pad of claim 14, wherein a platen window is flush with a platen and the transparent supporting layer is flush with the polishing layer.

16. The chemical mechanical polishing (CMP) pad of claim 14, wherein a platen window protrudes from a platen and the transparent supporting layer is recessed from the polishing layer.

17. The chemical mechanical polishing (CMP) pad of claim 14, wherein a platen window is recessed from a platen and the transparent supporting layer protrudes from the polishing layer.

18. A chemical mechanical polishing (CMP) platen for in situ monitoring, comprising:

a platen layer including a platen window, the platen window protruding higher than a height of the platen layer.

19. The chemical mechanical polishing (CMP) platen of claim 18, wherein a platen window protrudes from a platen layer to reduce a recessed region between the platen layer and the polishing layer.

20. The chemical mechanical polishing (CMP) platen of claim 18, wherein a platen window protrudes from a platen to fill a recessed region between the platen layer and the polishing layer.

21. A chemical mechanical polishing (CMP) platen for in situ monitoring, comprising:

a platen layer including a platen window, the platen window recessed within the platen layer.

22. The chemical mechanical polishing (CMP) pad of claim 21, wherein a transparent supporting layer protrudes from a polishing layer to reduce a recessed region between the platen window and the transparent supporting layer.

23. The chemical mechanical polishing (CMP) platen of claim 21, wherein a transparent supporting layer protrudes from a polishing layer to fill a recessed region between the platen window and the transparent supporting layer.

24. A method of monitoring a chemical mechanical polishing (CMP) process in situ, comprising:

providing a chemical mechanical polishing (CMP) pad on a platen, the chemical mechanical polishing (CMP) pad including a polishing layer and a pseudo window area, the pseudo window area having a thickness less than a thickness of the polishing layer and a thickness greater than zero; and

monitoring light passed through the pseudo window area to control the chemical mechanical polishing (CMP) process.

25. The method of claim 24, wherein a recessed region is adjacent the pseudo window area.

26. The method of claim 24, further comprising a transparent supporting layer adjacent the pseudo window area, wherein the monitored light also passes through the transparent supporting layer .

27. A method of monitoring a chemical mechanical polishing (CMP) process in situ, comprising:

providing a chemical mechanical polishing (CMP) pad on a platen, the chemical mechanical polishing (CMP) pad including a polishing layer having a recessed region, thereby forming a pseudo window area adjacent to the recessed region, the pseudo window area having a thickness less than a thickness of the polishing layer and a thickness greater than zero; and

monitoring light passed through the pseudo window area to control the chemical mechanical polishing (CMP) process.

28. The method of claim 27, wherein a platen window is flush with the platen and preserves the recessed region between the platen and the polishing layer.
29. The method of claim 27, wherein a platen window protrudes from the platen to reduce the recessed region between the platen and the polishing layer.
30. The method of claim 27, wherein a platen window protrudes from the platen to fill the recessed region between the platen and the polishing layer.
31. A method of monitoring a chemical mechanical polishing (CMP) process in situ, comprising:
- providing a chemical mechanical polishing (CMP) pad on a platen, the chemical mechanical polishing (CMP) pad including a polishing layer and a transparent supporting layer, thereby forming a pseudo window area adjacent to the transparent supporting layer; and
 - monitoring light passed through the pseudo window area to control the chemical mechanical polishing (CMP) process.
32. The method of claim 31, wherein a platen window is flush with the platen and the transparent supporting layer is flush with the polishing layer.
33. The method of claim 31, wherein a platen window protrudes from the platen and the transparent supporting layer is recessed from the polishing layer.

34. The method of claim 31, wherein a platen window is recessed from the platen and the transparent supporting layer protrudes from the polishing layer.

35. A method of monitoring a chemical mechanical polishing (CMP) process in situ, comprising:

providing a chemical mechanical polishing (CMP) pad on a platen, the chemical mechanical polishing (CMP) pad including a polishing layer and a pseudo window area and the platen including a platen layer and a platen window, the platen window protruding higher than a height of the platen layer; and

monitoring light passed through the pseudo window area to control the chemical mechanical polishing (CMP) process. (embodiment 2)

36. The method of claim 35, wherein the platen layer interacts with a polishing layer including a pseudo window area and a recessed region.

37. The method of claim 36, wherein the platen window protrudes from the platen layer to reduce the recessed region between the platen layer and the polishing layer.

38. The method of claim 36, wherein the platen window protrudes from the platen to fill the recessed region between the platen layer and the polishing layer.

39. A method of manufacturing a chemical mechanical polishing (CMP) pad for in situ monitoring of a chemical mechanical polishing (CMP) process, comprising:

providing a polishing layer; and

forming a pseudo window area in the polishing layer, the pseudo window area having a thickness less than a thickness of the polishing layer and a thickness greater than zero.

40. The method of claim 39, wherein a recessed region is adjacent the pseudo window area.

41. The method of claim 40, further comprising a transparent supporting layer adjacent the pseudo window area, wherein the monitored light also passes through the transparent supporting layer .

42. A method of manufacturing a chemical mechanical polishing (CMP) pad for in situ monitoring of a chemical mechanical polishing (CMP) process, comprising:
providing a polishing layer; and
forming a recessed region in the polishing layer to form a pseudo window area adjacent to the recessed region.

43. The method of claim 42, wherein a platen window is flush with a platen and preserves the recessed region between the platen and the polishing layer.

44. The method of claim 42, wherein a platen window protrudes from a platen to reduce the recessed region between the platen and the polishing layer.

45. The method of claim 42, wherein a platen window protrudes from a platen to fill the recessed region between the platen and the polishing layer.

46. A method of manufacturing a chemical mechanical polishing (CMP) pad for in situ monitoring of a chemical mechanical polishing (CMP) process, comprising:
- providing a polishing layer; and
 - forming a recessed region in the polishing layer; and
 - arranging a transparent supporting layer in the recessed region, thereby forming a pseudo window area adjacent to the transparent supporting layer.
47. The method of claim 46, wherein a platen window is flush with a platen and the transparent supporting layer is flush with the polishing layer.
48. The method of claim 46, wherein a platen window protrudes from a platen and the transparent supporting layer is recessed from the polishing layer.
49. The method of claim 46, wherein a platen window recessed from a platen and the transparent supporting layer protrudes from the polishing layer.
50. The method of claim 46, wherein the recessed region is formed on the backside of the polishing layer.
51. The method of claim 46, wherein the transparent supporting layer is extruded or fit in the recessed region.
52. A method of manufacturing a platen for in situ monitoring of a chemical mechanical polishing (CMP) process, comprising:

providing a platen layer;
forming a hole in the platen layer; and
arranging a platen window in the hole, the platen window protruding higher than a height of the platen layer.

53. The method of claim 52, wherein the platen window protrudes from the platen layer to reduce the recessed region between the platen layer and the polishing layer.

54. The method of claim 52, wherein the platen window protrudes from the platen to fill the recessed region between the platen layer and the polishing layer.

55. A method of detecting an end point in situ, comprising:
providing a pad on a platen, the pad including a polishing layer and a pseudo window area, the pseudo window area having a thickness less than a thickness of the polishing layer and a thickness greater than zero; and
monitoring light passed through the pseudo window area to detect the end point.

56. A method of detecting an end point in situ, comprising:
providing a pad on a platen, the pad including a polishing layer having a recessed region, thereby forming a pseudo window area adjacent to the recessed region, the pseudo window area having a thickness less than a thickness of the polishing layer and a thickness greater than zero; and
monitoring light passed through the pseudo window area to detect the end point.

57. A method of detecting an end point in situ, comprising:

providing a pad on a platen, the pad including a polishing layer and a transparent supporting layer, thereby forming a pseudo window area adjacent to the transparent supporting layer; and

monitoring light passed through the pseudo window area to detect the end point.

58. A method of detecting an end point in situ, comprising:

providing a pad on a platen, the pad including a polishing layer and a pseudo window area and the platen including a platen layer and a platen window, the platen window protruding higher than a height of the platen layer; and

monitoring light passed through the pseudo window area to detect the end point.